REMARKS

In the Office Action, claims 1-3, 5-13, 15-17, 21, 23, 24, and 26 were rejected. Claims 4 and 14 were objected to. No claims are presently added, amended, or canceled. Accordingly, claims 1-26 are pending in the present application. In view of the following remarks, Applicant respectfully requests reconsideration and allowance of all pending claims.

Allowable Subject Matter

In the Office Action, the Examiner indicated that claims 18-20, 22, and 25 are allowable and further indicated that claims 4 an 14 would be "allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." Office Action, p. 19. Applicant would like to thank the Examiner for noting the allowable subject matter and for recognizing the potential allowability of claims 4 and 14. However, Applicant believes that based on the arguments and remarks set forth below, all of the pending claims are allowable in their present form.

Rejections Under 35 U.S.C. §103

The Examiner rejected claims 1, 21, and 24 under 35 U.S.C. §103(a) as being unpatentable over Fritz et al. (U.S. Publication No. 2003/0199762, hereinafter "the Fritz reference") in view of Tannenbaum et al. (U.S. Patent No. 6,535,623, hereinafter "the Tannenbaum reference") and Cooper (U.S. Patent No. 7,215,365, hereinafter "the Cooper reference"); rejected claims 2 and 5 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, and Cooper references, as applied to claim 1 above, and further in view of Yu et al. (U.S. Patent No. 6,563,513, hereinafter "the Yu reference"); rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, Cooper, and Yu references, as applied to claim 2 above, and further in view of Nishikawa et al. (U.S. Patent No. 5,673,332, hereinafter "the Nishikawa reference"); rejected claim 6 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, and Cooper references as applied to claim 1 above, and further in view of Wilensky et al. (U.S. Patent

No. 7,171,057, hereinafter "the Wilensky reference"); rejected claim 7 under 35 U.S.C. §103(a) as being unpatentable over the Fritz, Tannenbaum, and Cooper references as applied to claim 1 above, and further in view of Janko et al. (U.S. Patent No. 6,690,840, hereinafter "the Janko reference"); rejected claims 11, 18-20, 23, and 26 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, in view of Hsieh (U.S. Patent No. 6,009,140, hereinafter "the Hsieh reference") and the Cooper reference; rejected claims 16 and 19 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, and Cooper references as applied to claim 11 and 18 above, and further in view of the Wilensky reference; rejected claims 12 and 15 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, and Cooper references as applied to claim 11, and further in view of the Yu reference; rejected claim 13 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, Hsieh, Cooper and Yu references as applied to claim 12 above, and further in view of the Nishikawa reference; rejected claim 17 under 35 U.S.C. §103(a) as being unpatentable over the Tannenbaum, and Cooper references as applied to claim 11 above, and further in view of the Janko reference. The Applicant respectfully traverses these rejections.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974). However, it is not enough to show that all the elements exist in the prior art since a claimed invention composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). It is important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* Specifically, there

must be some articulated reasoning with a rational underpinning to support a conclusion of obviousness; a conclusory statement will not suffice. *In re Kahn,* 441 F.3d 977, 988 (Fed. Cir. 2006). Indeed, the factual inquiry determining whether to combine references must be thorough and searching, and it must be based on *objective evidence of record. In re Lee,* 61 U.S.P.Q.2d 1430, 1436 (Fed. Cir. 2002). Moreover, if the proposed modification or combination or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (CCPA 1959); *see* M.P.E.P. §2143.01(IV).

Moreover, the Applicant submits that, during patent examination, the pending claims must be given an interpretation that is *reasonable* and *consistent* with the specification. *See In re Prater*, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969); *In re Morris*, 44 U.S.P.Q.2d 1023, 1027-28 (Fed. Cir. 1997); *see also* M.P.E.P. §2111 (describing the standards for claim interpretation during prosecution). Indeed, the *specification* is "the primary basis for construing the claims." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (citations omitted). One should rely *heavily* on the written description for guidance as to the meaning of the claims. *See id.* Although limitations from the specification are not read into the claims, claims should be given their broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art. *See In re Van Geuns*, 26 U.S.P.Q.2d 1057, 1059 (Fed. Cir. 1993); *In re Am. Acad. of Sci. Tech. Ctr.*, 70 U.S.P.Q.2d 1827 (Fed. Cir. 2004); M.P.E.P. § 2111. Indeed, "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from 'reading limitations of the specification into the claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no expressed basis in the claim." *In re Prater*, 162 U.S.P.Q. 541, 550-551 (C.C.P.A. 1969).

Independent Claims 1, 21, and 24

Independent claims 1, 21, and 24 recite, *inter alia*, "performing spike noise dependent blending of data derived from the input image data with the processed image data based upon [a] characterization." Applicant respectfully asserts that the Fritz, Tannenbaum, and Cooper references collectively fail to disclose each element of independent claims 1, 21, and 24.

Omitted Features: the Cooper reference

In the Office Action, the Examiner cited the Cooper reference for disclosing spike noise dependent blending. Office Action, p. 4. Specifically, the Examiner stated:

> Cooper, in analogous environment, teaches a system and method for effectively calculating destination pixels in an image data processing procedure, where performing a blending procedure to blend the for[e]going optimal processed image data (the processed image data) with the raw image data (the input image data) to thereby produce final image data (column 2, line 28-31).
>
> It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Cooper, where performing the spike noise dependent blending, in the system of Fritz et al., in order to provide an improved system and method for effectively performing an image data processing procedure (column 2, line 31-33).
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> Office Action, p. 4.

Applicant asserts that the Cooper reference fails to teach or suggest performing spike noise dependent blending, as recited by independent claims 1, 21, and 24. Instead, the Cooper reference appears to disclose techniques for processing an image to reduce variations in picture brightness. Cooper, col. 6, lines 55-58. Specifically, the Cooper reference discloses processing raw image data 418 "to temporarily create intermediate image data 420 which is ultimately transformed into final image data 422." *Id.* at col. 5,

lines 1-4. Each color channel may be processed separately under principles of the Retinex theory to produce processed image data. *Id.* at col. 6, lines 9-12; lines 54-55; Fig. 6. The processed image data may then be combined with the raw image data using a weighting factor based on how many pixels in the raw image data had an above average brightness. *Id.* at col. 12, lines 12-15; lines 21-35. In other words, the Cooper reference appears to teach processing image data based on color and then blending the processed image data with the raw image data based on brightness.

While the Cooper reference may generally teach the blending of image data, the Cooper reference appears to be silent as to performing spike noise dependent blending, as generally recited by the present claims. Indeed, the Examiner has not cited to any portion of the Cooper reference discussing noise, much less discussing spike noise dependent blending. Applicant has carefully reviewed the Cooper reference, and the term "noise" does not even appear in the reference. Further, the plain meaning of the word "noise" connotes something undesirable. For example, the term "noise" is defined as "an unwanted signal or a disturbance in an electronic device or instrument" and "irrelevant or meaningless data or output occurring along with desired information." *Merriam Webster's Collegiate Dictionary* 840 (11th ed. 2005) (emphasis added). There appears to be no indication in the Cooper reference that the brightness represents unwanted signals or noise. In contrast, the Cooper reference teaches that "the final optimal processed image may be averaged in with the original image such that very bright objects retain some of their dominance in the image." Cooper, col. 6, lines 65-67 (emphasis added).

Moreover, Applicant notes that the Fritz and Tannenbaum references fail to remedy the deficiencies of the Cooper reference set forth above. As discussed below, the Fritz reference fails to contemplate the use of spike noise dependent blending. Further,

the Examiner merely cited the Tannenbaum reference for its alleged teaching of processing input image data by identifying features of interest. The Tannenbaum reference also does not appear to contemplate the use of spike noise dependent blending in any manner.

Omitted Features: the Fritz reference

In the Office Action, the Examiner relied on the Fritz reference to disclose "characterizing spike noise," as recited in independent claims 1, 21, and 24 (thus, presumably, the Cooper reference taught "spike noise dependent blending" without ever teaching the characterization of spike noise, or even teaching the identification of spike noise). Office Action, p. 3. Specifically, the Examiner implied that median filtering an image to reduce noise spikes could represent characterizing spike noise as recited in the present claims. *See id.* However, claims 1, 21, and 24, all recite, *inter alia,* "characterizing spike noise . . . and performing spike noise dependent blending . . . based upon the characterization." (Emphasis added.) Thus, Applicant respectfully asserts that the Fritz reference fails to teach or suggest "characterizing spike noise," as recited in claims 1, 21, and 24. Further, Applicant notes that although this assertion was made in the Response to Final Office Action mailed April 24, 2008, Applicant could find nothing in the present Office Action addressing this assertion. Therefore, Applicant respectfully reiterates this assertion in the present Office Action.

As made clear by the recitations of independent claims 1, 21, and 24, the characterization is used to perform "spike noise dependent blending." Therefore, the characterization is of a type that can be used in blending. The specification provides examples of such characterizations. In one embodiment, the characterization of spike noise is completed when processing circuitry determines whether individual pixels of the image are likely to represent spike noise. *See* Application, p. 12, lines 25-26; Fig. 3, reference number 112. Then, either normal blending (e.g., 114) or noise likelihood blending (e.g., 116) is performed depending on how each pixel is characterized. *See* Fig.

5. Consequently, the characterization of the spike noise determines what type of blending is performed.

In contrast, the Fritz reference discloses filtering data to remove noise spikes prior to subsequent processing. Fritz, para. 72. The portion of the Fritz reference cited by the Examiner states the following: "Filter the image before processing for a number of reasons. These include: 1) Low pass filter to reduce overall noise of the image, 2) median filter to reduce isolated noise spikes in the image." Fritz, para. 72 (emphasis added); *see* Office Action pp. 12-13. Thus, it appears that the Fritz reference merely discloses removing noise spikes before processing. Indeed, the removal of noise before processing, as disclosed in the Fritz reference, seems to indicate that the noise would not be used during subsequent processing. The Examiner has not pointed to any process taught by the Fritz reference that could reasonably be correlated to characterizing spike noise in a manner that could be used in a subsequent blending step. Further, the Tannenbaum and Cooper references fail to obviate this deficiency. Therefore, absent some showing that the cited references teach the recited subject matter of claims 1, 21, and 24 (i.e. characterizing spike noise in a way that can be used in blending) no *prima facie* case of obviousness is believed to exist with regard to claims 1, 21, and 24.

In view of these deficiencies among others, the cited references, taken alone or in hypothetical combination, cannot render obvious the current independent claims 1, 21, and 24 and their dependent claims.

Independent Claims 11, 18, 23, and 26

Independent claims 11, 18, 23, and 26 recite, *inter alia*, "blend[ing] data derived from the input image data with the processed image data via weighting factors determined based upon the likelihood that the discrete picture elements exhibit spike noise." Applicant respectfully reiterates that the Tannenbaum, Hsieh, and Cooper references collectively fail to disclose each element of independent claims 11, 18, 23, and 26.

Omitted Features: the Hsieh reference

In the Office Action, the Examiner relied on the Hsieh reference to disclose "determin[ing] a likelihood that discrete picture elements in the input image data exhibit spike noise," as recited in independent claims 11, 18, 23, and 26. Office Action, pp. 22, 25. Specifically, the Examiner implied that using linear interpolation to reduce the probability of erroneously considering spike noise could represent determining a likelihood of spike noise as recited in the present claims. *See id.* However, claims 11, 18, 23, and 26 all recite, *inter alia*, "determine[ing] a likelihood that discrete picture elements . . . exhibit spike noise; and blending data . . . via weighting factors determined based upon the likelihood . . . ." (Emphasis added.) Thus, Applicant respectfully reasserts the previously unheeded assertion that the Hsieh reference fails to teach or suggest "determining a likelihood" of spike noise, as recited in claims 11, 18, 23, and 26.

As made clear by the recitations of independent claims 11, 18, 23, and 26, the "likelihood" is used to determine weighting factors, i.e., the greater the likelihood, the greater the weight. Therefore, the determination of the "likelihood" necessarily includes determining a likelihood of spike noise that can be used to determine weighting factors. The specification provides examples of such determinations. In one embodiment, the determination is completed when processing circuitry determines whether individual pixels of the image are likely to represent spike noise. *See* Application, p. 12, lines 25-26; Fig. 3, reference number 112. The determination may employ a multi-level mask to categorize pixels into various levels of the mask based on a percentage of a set intensity value. Application, p. 12, lines 17-23. Then, for each level of the mask, a different weighting factor may be used for blending. Application, p. 12, lines 21-23. Thus, the likelihood determination made for each pixel determines the weighting factor that is used for blending.

In contrast, the Hsieh reference discloses using linear interpolation to determine the boundary of a high density object. *See* Hsieh, col. 2, lines 3-6; 14-15. Boundaries of neighboring rows for a boundary candidate are located by "ensuring that the number of pixels that belong to the high density object exceeds a certain predefined threshold." *Id.* at col. 2, lines 17-20. The neighboring boundaries are compared to the boundary candidate and then the boundaries may be shifted or smoothed based on the comparison. *See* Hsieh, col. 2, lines 24-40. The boundaries may identify high-density objects, such as teeth. *See id.*

The portion of the Hsieh reference cited by the Examiner states the following: "Particularly, linear interpolation is utilized to determine the boundary, and to reduce the probability that spike noise will be erroneously considered as high density objects, the N by N neighbors of the boundary candidate are searched . . . ." Hsieh, col. 2, lines 14-18; *see* Office Action, pp. 22 and 25. There appears to be no indication that this linear interpolation process, or any other process disclosed in the Hsieh reference, is based on, takes into account, or in anyway calculates the likelihood that a pixel represents spike noise. Indeed, the passage cited by the Examiner, appears merely to disclose that the technique reduces the probability that spike noise will be erroneously considered. The Examiner has not pointed to any process taught by the Hsieh reference that could reasonably be correlated to determining the likelihood of spike noise, much less a likelihood that could be used to determine weighting factors for blending. Further, the Tannenbaum and Cooper references fail to obviate this deficiency. Therefore, absent some showing that the cited references teach the recited subject matter of claims 11, 18, 23, and 26 (i.e. determining a likelihood of spike noise that can be used to determine weighting factors for blending) no *prima facie* case of obviousness is believed to exist with regard to claims 11, 18, 23, and 26.

Omitted Features: the Cooper reference

In the Office Action, the Examiner relied on the Cooper reference to disclose "blending data . . . based upon the likelihood that the discrete picture elements exhibit spike noise" as recited in claims 11, 18, 23, and 26. However, as discussed above in relation to independent claims 1, 21, and 24, the Cooper reference fails to disclose any type of noise, much less blending data based upon the likelihood of noise. Further, the Hsieh and Tannenbaum references fail to obviate this deficiency. As discussed above, the Hsieh reference fails to teach determining the likelihood of spike noise, and the Examiner merely cited the Tannenbaum reference for its alleged teaching of processing input image data by identifying features of interest. Neither the Tannenbaum reference nor the Hsieh reference, taken alone or in hypothetical combination, teach or suggest the act of blending data . . . based upon the likelihood that the discrete picture elements exhibit spike noise," as recited in claims 11, 18, 23, and 26.

In view of these deficiencies among others, the cited references, taken alone or in hypothetical combination, cannot render obvious the current independent claims 11, 18, 23, and 26 and their dependent claims.

Authorization for Extensions of Time and Payment of Fees

In accordance with 37 C.F.R. §1.136, Applicant hereby provides a general authorization to treat this and any future reply requiring an extension of time as incorporating a request thereof. The Commissioner is authorized to charge any such extension fee, and any other fees determined to be due, to Deposit Account No. 07-0845; Order No. 135059XZ(GEMS:0240).

Conclusion

In view of the remarks set forth above, Applicant respectfully requests allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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/John Rariden/
John M. Rariden
Reg. No. 54,388
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289
(281) 970-4545